SUPPLY FAN SCHEDULE

SYMBOL	MANUFACTURER	MODEL	LOCATION	TYPE	ARRANGEMENT, ROTATION & DISCHARGE	FAN				MOTOR				SOUND POWER DATA, Db, INLET/OUTLET								COMMENTS
						CFM (2)	RPM	SP "WG	BHP	H.P.	VOLT	PHASE	CONTROL METHOD (3)	63	125	250	500	1000	2000	4000	8000	
SF-1	COOK	600QMXD-HP	PENTHOUSE	MIXED FLOW	HORIZONTAL	80000	732	4.49	79.9	100	460	3	VFD	96/99	99/103	97/100	93/97	89/92	87/88	82/86	78/85	1
SF-2	COOK	600QMXD-HP	PENTHOUSE	MIXED FLOW	HORIZONTAL	80000	667	4.49	79.9	100	460	3	VFD	96/99	99/103	97/100	93/97	89/92	87/88	82/86	78/85	1
SF-3	COOK	600QMXD-HP	PENTHOUSE	MIXED FLOW	HORIZONTAL	80000	667	4.49	79.9	100	460	3	VFD	96/99	99/103	97/100	93/97	89/92	87/88	82/86	78/85	1

(1) FAN TO BE COMPLETE WITH FLEXIBLE CONNECTION, FAN STEEL SEISMIC ISOLATION BASE, SPRING TYPE SEISMIC VIBRATION ISOLATORS WITH THRUST RESTRAINTS, C AND OUTLET SCREEN
(2) DESIGN BASIS: 180,000 CFM TOTAL REQUIRED. FANS SELECTED TO PROVIDE 160,000 CFM (88% CAPACITY) IF ONE FAN IS OUT OF SERVICE.
(3) VFDS FURNISHED BY DIVISION 15

RETURN FAN SCHEDULE

SYMBOL	MANUFACTURER	MODEL	LOCATION	TYPE	ARRANGEMENT, ROTATION & DISCHARGE	FAN				ELECTRICAL MOTOR				SOUND POWER DATA, Db, INLET/OUTLET CONTROL METHOD (3)	63	125	250	500	1000	2000	4000	8000	COMMENTS
						CFM (1)	RPM	SP "WG	BHP	H.P.	VOLT	PHASE	Hz.											
RF-1	COOK	600QMXD-HP	PENTHOUSE	MIXED FLOW	HORIZONTAL	80000	543	1.25	26	30	460	3	60	VFD	91/95	91/97	88/95	87/91	85/87	79/81	72/74	65/66	1
RF-2	COOK	600QMXD-HP	PENTHOUSE	MIXED FLOW	HORIZONTAL	80000	543	1.25	26	30	460	3	60	VFD	91/95	91/97	88/95	87/91	85/87	79/81	72/74	65/66	1
RF-3	COOK	600QMXD-HP	PENTHOUSE	MIXED FLOW	HORIZONTAL	80000	543	1.25	26	30	460	3	60	VFD	91/95	91/97	88/95	87/91	85/87	79/81	72/74	65/66	1

(1) FAN TO BE COMPLETE WITH FLEXIBLE CONNECTION, FAN STEEL SEISMIC ISOLATION BASE, SPRING TYPE SEISMIC VIBRATION ISOLATORS WITH THRUST RESTRAINTS, C AND OUTLET SCREEN
(2) DESIGN BASIS: 180,000 CFM TOTAL REQUIRED. FANS SELECTED TO PROVIDE 160,000 CFM (88% CAPACITY) IF ONE FAN IS OUT OF SERVICE.
(3) VFDS FURNISHED BY DIVISION 15

COOLING COIL SCHEDULE

SYMBOL	CFM	TOTAL FACE AREA (SQ. FT.)	NO. OF ROWS	COIL SIZE (IN) FINNED LENGTH	FINNED WIDTH	ENTERING AIR DB (F)	ENTERING AIR WB (F)	LEAVING AIR DB (F)	LEAVING AIR WB (F)	MAX S.P. DROP	CIRCULATING FLUID						COMMENTS
											FLUID	GPM	TEMP IN (F)	TEMP OUT (F)	MAX. HEAD LOSS FT.		
CC-1	60000	120	8	120	48	82	63	53.9	53.3	0.56	30% PG	334	44	53.9	6.9		(1) (2) (3)
CC-2	60000	120	8	120	48	82	63	53.9	53.3	0.56	30% PG	334	44	53.9	6.9		(1) (2) (3)
CC-3	60000	120	8	120	48	82	63	53.9	53.3	0.56	30% PG	334	44	53.9	6.9		(1) (2) (3)

(1) 45F ENTERING WATER TEMPERATURE, 55F LEAVING WATER TEMPERATURE
(2) MAXIMUM FIN SPACING – 11 FPI.
(3) PROVIDE CONCRETE HOUSEKEEPING PAD UNDERNEATH COILS.

COOLING TOWER SCHEUDLE

SYMBOL	MANUFACTURER	MODEL	LOCATION	AMBIENT AIR TEMP F DB/F WB	WATER TEMP. IN/OUT	WATER FLOW (GPM)	ELECTRICAL H.P.	RPM	VOLT	PHASE	Hz	OPERATING WEIGHT (LBS)	ACCESSORIES REMARKS
CT-1	DELTA	TM-115412	ROOF	97/62	95/85	1252	(3)	1800.0	230/460	3.0	60.0	12125.0	(1)(2)(4)

(1) MOTOR STARTER TO BE FACTORY MOUNTED AND PREWIRED.
(2) PROVIDE NON-METALLIC COOLING TOWER MADE OF FIBERGLASS OR POLY
(3) TWO 15 HP MOTORS
(4) PROVIDE WITH ANTIFREEZE PROTECTION

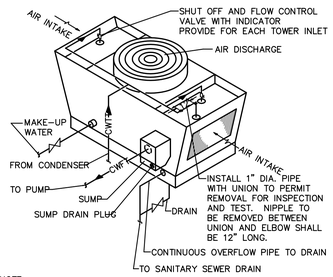
MOTORIZED DAMPER SCHEDULE

SYMBOL	MANUFACTURER	MODEL	SIZE	FUNCTION	COMMENTS
MD-1	RUSKIN	CD-40X2	20" X 10"	EXHAUST AIR	
MD-2	RUSKIN	CD-50	20" X 12"	RETURN AIR	
MD-3	RUSKIN	CD-40X2	20" X 12"	OUTSIDE AIR	

PUMP SCHEDULE

SYMBOL	MANUFACTURER	MODEL	GPM	HEAD FT.	(3) HP	RPM	EFF %	VOLTS/ PHASE/ CYCLE	EQUIP. OR AREA	COMMENTS
P-4	BELL & GOSSETT	1510	1252	50	25	1750	70	460/1/60	WATER SIDE ECONOMIZER COILS	(1) (2) (4) (5)

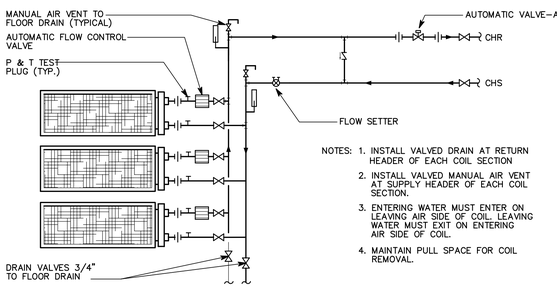
(1) COMPLETE WITH MATCHED SUCTION DIFFUSER
(2) BASE MOUNTED
(3) COORDINATE STARTER WITH ELECTRICAL
(4) PROVIDE CONCRETE HOUSEKEEPING PAD UNDERNEATH PUMP.
(5) PROVIDE VFD FOR PUMP



NOTE:
1. DETAIL INDICATES ONE CELL. WHEN FLOOR PLANS AND SCHEDULES INDICATE MORE THAN ONE CELL, THE BASINS OF THE CELLS ARE TO BE INTERCONNECTED BY FLUMES. EACH CELL SHALL BE PROVIDED WITH ITS OWN SUMP AND ANTICAVITATION PLATE. THE MULTI-CELL TOWER SHALL HAVE ONE MAKE-UP VALVE, ONE OVERFLOW, AND ONE DRAIN. SEE FLOOR PLANS FOR LOCATIONS. ONE INCH PIPE FOR INSPECTION AND TEST SHALL BE PROVIDED ONLY AT ONE CELL.

B1 INDUCED DRAFT COOLING TOWER PIPING

SCALE:



NOTES:
1. INSTALL VALVED DRAIN AT RETURN HEADER OF EACH COIL SECTION
2. INSTALL VALVED MANUAL AIR VENT AT SUPPLY HEADER OF EACH COIL SECTION.
3. ENTERING WATER MUST ENTER ON LEAVING AIR SIDE OF COIL. LEAVING WATER MUST EXIT ON ENTERING AIR SIDE OF COIL.
4. MAINTAIN PULL SPACE FOR COIL REMOVAL.

A1 CHILLED WATER COIL PIPING SCHEMATIC

SCALE:

ABBREVIATIONS

NOTE: ALL ABBREVIATIONS MAY NOT BE USED

AD	ACCESS DOOR	MCA	MINIMUM CIRCUIT AMPS
AIR	AIR CONDITION(-ING,-ED)	MFR	MANUFACTURER
COND		MIN	MINIMUM
APD	AIR PRESSURE DROP	N/A	NOT APPLICABLE
BD	BALANCING DAMPER	NC	NORMALLY CLOSED
BHP	BRAKE HORSE POWER	NC	NOISE CRITERIA
BTU	BRITISH THERMAL UNIT	NIC	NOT IN CONTRACT
BTUH	BTU/HOUR	NO	NORMALLY OPEN
CFH	CUBIC FEET PER HOUR	NPSH	NET POSITIVE SUCTION
CFM	CUBIC FEET PER MINUTE		HEAD
CLG	COOLING	NTS	NOT TO SCALE
COMP	COMPONENT	OA	OUTSIDE AIR
COND	CONDENS(-ER, -ING, -ATION)	OD	OUTSIDE DIAMETER
		OZ	OUNCE
CV	CONTROL VALVE	PD	PRESSURE DROP OR DIFFERENCE
CW	COLD WATER	PG	PROPYLENE GLYCOL
DIA	DIAMETER	PH	PHASE
DISCH	DISCHARGE	PPM	PARTS PER MILLION
DP	DEPTH OR DEEP	PRESS	PRESSURE
DB	DRY BULB TEMPERATURE	PSF	POUNDS PER SQUARE FOOT
(E)	EXISTING	PSI	POUNDS PER SQUARE INCH
EER	ENERGY EFFICIENCY RATIO	PSIA	PSI ABSOLUTE
EFF	EFFICIENCY	PSIG	PSI GAUGE
EG	ETHYLENE GLYCOL	R	THERMAL RESISTANCE
ELEC	ELECTRIC	RA	RETURN AIR
ELEV	ELEVATION	RECIRC	RECIRCULATE
ENT	ENTERING	REFR	REFRIGERATION
EVAP	EVAPORAT(-E, -ING, -ED, -OR)	REQD	REQUIRED
		RLA	RATED ---- AMPS
EWT	ENTERING WATER TEMPERATURE	RPM	REVOLUTIONS PER MINUTE
EXT	EXTERNAL	RW	RAINWATER
(F)	FUTURE	SA	SUPPLY AIR
F	FAHRENHEIT	SC	SHADING COEFFICIENT
FC	FLEXIBLE CONNECT(-OR, -ION)	SCFM	STANDARD CUBIC FEET PER MINUTE
FD	FIRE DAMPER	SCW	SOFT COLD WATER
FLA	FULL LOAD AMPS	SF	SAFETY FACTOR
FPI	FINS PER INCH	SH	SENSIBLE HEAT
FPM	FEET PER MINUTE	SL	SEA LEVEL
FPS	FEET PER SECOND	SP	STATIC PRESSURE
FSD	FIRE SMOKE DAMPER	SPECS(S)	SPECIFICATION(S)
FT	FEET	SQ	SQUARE
GAL	GALLON(S)	STD	STANDARD
GPH	GALLONS PER HOUR	STM	STEAM
GPM	GALLONS PER MINUTE	TEMP	TEMPERATURE
HD	HEAD	TD	TEMP. DROP OR DIFF.
HG	MERCURY	THERM	THERMAL
HR	HOUR	TOT	TOTAL
HT	HEIGHT	TSTAT	THERMOSTAT
HTG	HEATING	V	VOLT
HP	HORSE POWER	VAC	VACUUM
HW	HOT WATER	VAV	VARIABLE AIR VOLUME
HZ	HERTZ(FREQUENCY)	VEL	VELOCITY
ID	INSIDE DIAMETER	VENT	VENT, VENTILATION
IN	INCH	VERT	VERTICAL
KW	KILOWATT	VFD	VARIABLE FREQUENCY DRIVE
LAT	LEAVING AIR TEMPERATURE	VOL	VOLUME
LBS	POUNDS	WC	WATER COLUMN
LG	LENGTH	WG	WATER GAUGE
LH	LATENT HEAT	WPD	WATER PRESSURE DROP
LRA	LOCKED ROTOR AMPS	WTR	WATER
LVG	LEAVING	WT	WEIGHT
LWT	LEAVING WATER TEMPERATURE	WB	WET BULB TEMP
MAX	MAXIMUM	YR	YEAR
MBH	THOUSAND BTU PER HOUR		

SYMBOL LEGEND

SYMBOL	DESCRIPTION
DUCTWORK	
SINGLE LINE / DOUBLE LINE	RECTANGULAR SUPPLY DUCT UP
	RECTANGULAR SUPPLY DUCT DOWN
	RECTANGULAR RETURN DUCT UP
	RECTANGULAR RETURN DUCT DOWN
	RECTANGULAR EXHAUST DUCT UP
	RECTANGULAR EXHAUST DUCT DOWN
	ROUND DUCT UP
	ROUND DUCT DOWN
	ACCOUSTICALLY LINED RECTANGULAR DUCT
	90° RECTANGULAR ELBOW WITH TURNING VANES
	90° RADIUS ELBOW R=1.5
	DUCT SIZE OR SHAPE TRANSITION
	OPPOSED BLADE BALANCING DAMPER (O.B.D.) IN RECT DUCT
	BUTTERFLY BALANCING DAMPER IN ROUND DUCTS
	COMBINATION TEE
	SPLITTER DAMPER
	SQUARE OR RECTANGULAR CEILING DIFFUSER
	ROUND CEILING DIFFUSER
	SIDEWALL REGISTER SUPPLY OR RETURN
	ROUND FLEXIBLE DUCT
	RETURN GRILLE
	EXHAUST GRILLE
FSD / FSD	FIRE/SMOKE DAMPER
	FIRE DAMPER
SD / SD	SMOKE DAMPER
FC / FC	FLEXIBLE CONNECTION
	EXISTING DUCT
	DUCT TO BE REMOVED

SYMBOL LEGEND

SYMBOL	DESCRIPTION
REFERENCE AND LINE SYMBOLS	
# / SHEET	DETAIL INDICATOR: # INDICATES DETAIL NUMBER, SHEET INDICATES DRAWING SHEET WHERE DETAIL IS SHOWN.
# / SHEET	ELEVATION OR SECTION INDICATOR, EXTERIOR: # INDICATES ELEVATION OR SECTION NUMBER, SHEET INDICATES DRAWING SHEET WHERE ELEVATION OR SECTION IS SHOWN.
# / SHEET	ELEVATION OR SECTION INDICATOR, INTERIOR: # INDICATES ELEVATION OR SECTION NUMBER, SHEET INDICATES DRAWING SHEET WHERE ELEVATION OR SECTION IS SHOWN.
100	ROOM OR SPACE NUMBER.
1	KEYNOTE INDICATOR.
	REVISION INDICATOR.
CU-1	EQUIPMENT INDICATOR.
P-	PLUMBING FIXTURE INDICATOR.
TYPE / CFM / SIZE	DIFFUSER/GRILLE INDICATOR.
TYPE / SIZE	DIFFUSER/GRILLE INDICATOR.
	BREAK, STRAIGHT
	BREAK, ROUND.
MATCH LINE / SEE XX/X-XXX	MATCH LINE INDICATOR
--------	HIDDEN FEATURES LINE: HIDDEN, THIN LINE.
	CONTRACT LIMIT LINE: DASHDOT, WIDE LINE.
	NEW CONNECTION POINT TO EXISTING
HVAC SYMBOLS	
T	THERMOSTAT
S	TEMPERATURE SENSOR
H	HUMIDISTAT

DEFINITIONS

NOTE: ALL DEFINITIONS MAY NOT BE USED.

INDICATED: THE TERM "INDICATED" REFERS TO GRAPHIC REPRESENTATIONS, NOTES, OR SCHEDULES ON THE DRAWINGS, OTHER PARAGRAPHS OR SCHEDULES IN THE SPECIFICATIONS, AND SIMILAR REQUIREMENTS IN THE CONTRACT DOCUMENTS. WHERE TERMS SUCH AS "SHOWN", "NOTED", "SCHEDULED", AND "SPECIFIED" ARE USED, IT IS TO HELP THE READER LOCATE THE REFERENCE, NO LIMITATION ON LOCATION IS INTENDED.

DIRECTED: TERMS SUCH AS "DIRECTED", "REQUESTED", AUTHORIZED", "SELECTED", "APPROVED", "REQUIRED", AND "PERMITTED" MEAN "DIRECTED BY THE ENGINEER", "REQUESTED BY THE ENGINEER", AND SIMILAR PHRASES.

APPROVE: THE TERM "APPROVED", WHERE USED IN CONJUNCTION WITH THE ENGINEER'S ACTION ON THE CONTRACTOR'S SUBMITTALS, APPLICATIONS, AND REQUESTS, IS LIMITED TO THE ENGINEER'S DUTIES AND RESPONSIBILITIES AS STATED IN GENERAL AND SUPPLEMENTARY CONDITIONS.

FURNISH: THE TERM "FURNISH" IS USED TO MEAN "SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION, AND SIMILAR OPERATIONS."

INSTALL: THE TERM "INSTALL" IS USED TO DESCRIBE OPERATIONS AT PROJECT SITE INCLUDING THE ACTUAL "UNLOADING, UNPACKING, ASSEMBLY, ERECTION, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS TO MAKE THE ITEM FULLY OPERATIONAL."

PROVIDE: THE TERM "PROVIDE" MEANS "TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE."

INSTALLER: AN "INSTALLER" IS THE CONTRACTOR OR AN ENTITY ENGAGED BY THE CONTRACTOR, EITHER AS AN EMPLOYEE, SUBCONTRACTOR, OR SUB-SUBCONTRACTOR, FOR PERFORMANCE OF A PARTICULAR CONSTRUCTION ACTIVITY, INCLUDING INSTALLATION, ERECTION, APPLICATION, AND SIMILAR OPERATIONS. INSTALLERS ARE REQUIRED TO BE EXPERIENCED IN THE OPERATIONS THEY ARE ENGAGED TO PERFORM.

SHEET INDEX

SHEET NO	SHEET TITLE
ME-001	MECHANICAL SYMBOLS, DETAILS AND SCHEDULES
ME-501	MECHANICAL SCHEMATIC
MH-101	PENTHOUSE MECHANICAL AND DEMOLITION PLANS

GENERAL MECHANICAL NOTES (CONT.)

30. TWO OPERATING AND MAINTENANCE MANUALS SHALL BE PROVIDED IN HARD BACK LOOSE LEAF BINDERS. MANUALS SHALL CONTAIN PRODUCT CUT SHEETS AND OPERATING AND MAINTENANCE INSTRUCTIONS ON ALL EQUIPMENT, ACCESSORIES, FIXTURES, VALVES, ETC., PROVIDED FOR THE PROJECT.
31. UPON COMPLETION OF THE WORK, REMOVE ALL SURPLUS MATERIALS AND RUBBISH. MAKE ALL REQUIRED PATCHING AND REPAIRS OF OTHER TRADES' WORK DAMAGED BY THE DIVISION 15 CONTRACTOR, AND LEAVE THE PREMISES IN A CLEAN, ORDERLY CONDITION.
32. THE DIVISION 15 CONTRACTOR SHALL OPERATE THE SYSTEM AND DEMONSTRATE ALL ASPECTS TO THE ENGINEER AND/OR OWNER, TO PROVE ITS OPERATION. ALL FILTERS USED DURING CONSTRUCTION SHALL BE REPLACED PRIOR TO THE TEST RUN PERIOD.
33. THE DIVISION 15 CONTRACTOR SHALL GUARANTEE THE HVAC SYSTEM FOR A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION.
34. THE DIVISION 15 CONTRACTOR SHALL, DURING CONSTRUCTION, MAINTAIN A SET OF AS-BUILT REDLINED RECORD DRAWINGS AT THE PROJECT SITE. ALL CHANGES IN LAYOUT, ROUTING, EQUIPMENT, COMPONENTS, AND ACCESSORIES SHALL BE RECORDED. THESE REDLINES SHALL BE GIVEN TO THE ARCHITECT/ENGINEER AFTER THE FINAL INSPECTION
35. ALL VFDS SHALL BE FURNISHED BY DIVISION 15 AND INSTALLED AND WIRED BY DIVISION 16.

GENERAL MECHANICAL NOTES

1. DO NOT ROUTE DUCTS AND PIPES ABOVE ELECTRICAL PANELS. ALL ELECTRICAL PANELS MUST HAVE CLEAR ACCESS SPACE IN FRONT OF PANEL 4'-0" DEEP AND 6'-6" HIGH. DO NOT ROUTE DUCTS AND PIPES IN ELECTRICAL ROOMS, EXCEPT DUCTS AND PIPES SERVING THE ROOM.
2. IF CONTRACTOR ENCOUNTERS MATERIAL WHICH MAY CONTAIN ASBESTOS IMMEDIATELY STOP WORK IN THIS AREA AND NOTIFY THE OWNER.
3. THE WORKING DRAWINGS ARE DIAGRAMMATIC. BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, THEY DO NOT SHOW EVERY OFFSET, BEND OR ELBOW NECESSARY FOR THE COMPLETE INSTALLATION IN THE SPACE PROVIDED. ALL LOCATIONS FOR PLUMBING EQUIPMENT AND PIPING SHALL BE CHECKED AND COORDINATED WITH THE ARCHITECTURAL, MECHANICAL, STRUCTURAL AND ELECTRICAL DRAWINGS.
4. THE DRAWINGS SHOW THE GENERAL DESIGN, ARRANGEMENTS AND THE EXTENT OF THE SYSTEM. IT SHALL BE THE WORK OF THE CONTRACTOR TO MAKE SUCH SLIGHT ALTERATIONS AS MAY BE NECESSARY TO MAKE THE SYSTEM COMPLETE AND OPERATIONAL IN ACCORDANCE WITH THE DESIGN INTENT. MAJOR DEVIATIONS SUCH AS CHANGES IN COMPONENT SIZES, WEIGHTS, QUANTITIES, OR MATERIAL REQUIRE PRIOR APPROVAL BY THE CONSULTING ENGINEER.
5. PROVIDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO CONSTRUCT A COMPLETE, OPERATIONAL HVAC SYSTEM FOR THE ENTIRE PROJECT AS SHOWN ON THESE DRAWINGS, INCLUDING ALL NECESSARY FEES AND PERMITS.
6. THE ENTIRE INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF THE MOST RECENTLY ADOPTED BUILDING CODE, MECHANICAL CODE, PLUMBING CODE, ELECTRICAL CODE, AND ALL OTHER APPLICABLE CITY, COUNTY, SCHOOL DISTRICT, STATE, AND FEDERAL CODES AND REGULATIONS IN EFFECT AT THE DATE OF THE BID. CONFORM TO ANY CODES, RULES, REGULATIONS AND REQUIREMENTS THAT THE PROJECT OWNER HAS.
7. PRIOR TO FABRICATION AND INSTALLATION, COORDINATE THE INSTALLATION OF ALL HVAC PIPING, DUCTWORK, AND EQUIPMENT WITH PLUMBING PIPING, PLUMBING EQUIPMENT, REFRIGERATION TRENCHES AND PIPING, FIRE PROTECTION PIPING AND ALL OTHER TRADES INCLUDING BUT NOT LIMITED TO: THE MECHANICAL CONTRACTOR, REFRIGERATION CONTRACTOR, ELECTRICAL CONTRACTOR, FIRE PROTECTION CONTRACTOR, GENERAL CONTRACTOR, AND ANY CONTRACTOR HIRED DIRECTLY BY THE OWNER. WHERE CONFLICTS MAY OCCUR, THEY SHALL BE RESOLVED PRIOR TO INSTALLATION.
8. THE DRAWINGS SHOW THE GENERAL DESIGN, ARRANGEMENTS AND THE EXTENT OF THE SYSTEM. IT SHALL BE THE WORK OF THE CONTRACTOR TO MAKE SUCH SLIGHT ALTERATIONS AS MAY BE NECESSARY TO MAKE THE SYSTEM COMPLETE AND OPERATIONAL IN ACCORDANCE WITH THE DESIGN INTENT. MAJOR DEVIATIONS SUCH AS CHANGES IN COMPONENT SIZES, WEIGHTS, QUANTITIES, OR MATERIAL REQUIRE PRIOR APPROVAL BY THE CONSULTING ENGINEER.
9. ALL HVAC INFORMATION IS NOT SHOWN ON THE HVAC DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING INFORMATION ON ALL OTHER CONSTRUCTION DOCUMENTS INCLUDING ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL AND REFRIGERATION DRAWINGS.
10. THE WORKING DRAWINGS ARE DIAGRAMMATIC. BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, THEY DO NOT SHOW EVERY OFFSET, BEND OR ELBOW NECESSARY FOR THE COMPLETE INSTALLATION IN THE SPACE PROVIDED. ALL LOCATIONS FOR HVAC EQUIPMENT AND PIPING SHALL BE CHECKED AND COORDINATED WITH THE ARCHITECTURAL, MECHANICAL, STRUCTURAL AND ELECTRICAL DRAWINGS.
11. CAREFUL COORDINATION IS REQUIRED WITH ALL TRADES BEFORE ANY PIPE, DUCT, OR EQUIPMENT IS ORDERED AND/OR INSTALLED. ANY CONFLICTS AND/OR CHANGES FOUND DURING INSTALLATION THAT RESULT FROM LACK OF COORDINATION BY THE CONTRACTORS DURING THE SHOP DRAWING PROCESS ARE THE RESPONSIBILITY OF THE CONTRACTOR.
12. 1/8" SCALE SHOP DRAWINGS (SUBMITTED FOR APPROVAL) ARE REQUIRED FOR ALL DUCTWORK AND PIPING SYSTEMS.
13. THE DRAWINGS AND SPECIFICATIONS HAVE BEEN PREPARED TO SUPPLEMENT EACH OTHER AND THEY SHALL BE INTERPRETED AS AN INTEGRAL UNIT WITH THE ITEMS SHOWN ON ONE AND NOT THE OTHER BEING FURNISHED AND INSTALLED AS THOUGH SHOWN AND CALLED OUT IN BOTH.
14. DETAILS: THE CONTRACTOR IS RESPONSIBLE TO REVIEW AND USE WHERE APPROPRIATE ALL OF THE MECHANICAL DETAILS SHOWN ON THE DRAWINGS. DETAILS MAY OR MAY NOT BE CALLED OUT ON THE DRAWINGS WITH SYMBOLS OR KEYED NOTES. ANY CHANGES RESULTING FROM FAILURE TO INSTALL THE MECHANICAL SYSTEM WITHOUT USING THE INCLUDED DETAILS IS THE RESPONSIBILITY OF THE CONTRACTOR.
15. PIPING SCHEMATICS: THE CONTRACTOR IS RESPONSIBLE TO REVIEW THE PIPING SCHEMATICS INCLUDED WITH THE DRAWINGS FOR PIPING CONNECTIONS TO ALL MECHANICAL EQUIPMENT. THE PIPING SCHEMATICS SHOW DETAILED CONNECTIONS INCLUDING NECESSARY VALVES, FITTINGS, PRESSURE AND TEMPERATURE GAUGES, ETC., THAT ARE NOT SHOWN ON THE PIPING PLANS. ANY CHANGES RESULTING FROM FAILURE TO INSTALL THE MECHANICAL SYSTEM WITHOUT USING THE INCLUDED PIPING SCHEMATICS IS THE RESPONSIBILITY OF THE CONTRACTOR.
16. THE STRUCTURE SHOWN ON ALL DETAILS MAY OR MAY NOT PERTAIN TO A PORTION OR ANY PORTION OF THE BUILDING. COORDINATE MOUNTING REQUIREMENTS WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS.
17. ANY PART OF THIS INSTALLATION THAT FAILS, IS UNFIT, OR BECOMES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
18. COORDINATE THE RETURN OF ALL MECHANICAL EQUIPMENT REMOVED DURING DEMOLITION WITH THE OWNER'S REPRESENTATIVE.
19. ALL EQUIPMENT SHALL PROVIDE THE SCHEDULED PERFORMANCE AT THE SITE ALTITUDE.
20. EQUIPMENT MODEL NUMBERS IN SCHEDULES ARE SHOWN TO ESTABLISH THE TYPE OF PRODUCT THAT HAS TO BE USED. THE SELECTED PRODUCT MUST MEET THE SCHEDULED PERFORMANCE DATA. THIS MAY REQUIRE A DIFFERENT MODEL NUMBER TO THAT SCHEDULED.
21. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL FITTINGS, TRANSITIONS, VALVES, DAMPERS, AND OTHER DEVICES AND ACCESSORIES REQUIRED FOR A COMPLETE, WORKABLE INSTALLATION.
22. THE DIVISION 15 CONTRACTOR SHALL FURNISH ALL REQUIRED MOTORS. ALL MOTOR STARTING EQUIPMENT, WHEN NOT A PART OF THE EQUIPMENT, WILL BE FURNISHED BY THE ELECTRICAL CONTRACTOR.
23. EXISTING INTERIOR PIPING, EQUIPMENT, AND DUCTWORK HAS BEEN LOCATED IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL VERIFY LOCATIONS AND POINTS OF CONNECTION AND PIPE ROUTING THROUGH EXISTING CONDITIONS PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL PERFORM THE WORK IN A MANNER THAT WILL CAUSE A MINIMUM DISRUPTION TO BUILDING TENANT USE AND SHALL COORDINATE THE WORK WITH THE BUILDING OWNER'S REPRESENTATIVE.
24. THE CONTRACTOR IS RESPONSIBLE FOR HVAC EQUIPMENT CHECK-IN, SAFEKEEPING, AND DAMAGE.
25. DO NOT ROUTE DUCTS AND PIPES ABOVE ELECTRICAL PANELS. ALL ELECTRICAL PANELS MUST HAVE CLEAR ACCESS SPACE IN FRONT OF PANEL 4'-0" DEEP AND 6'-6" HIGH. DO NOT ROUTE DUCT AND PIPES IN ELECTRICAL ROOMS, EXCEPT DUCTS AND PIPES SERVING THE ROOM.
26. IF CONTRACTOR ENCOUNTERS MATERIAL WHICH MAY CONTAIN ASBESTOS, IMMEDIATELY STOP WORK IN THIS AREA AND NOTIFY THE OWNER.
27. DO NOT USE STEEL ROOF DECK TO SUPPORT LOADS FROM PIPING, DUCTWORK OR EQUIPMENT. HANGER LOADS LESS THAN 50 LBS. MAY BE HUNG FROM THE STEEL ROOF DECK IN CASES WHERE HANGING FROM THE STEEL ROOF DECK CANNOT BE AVOIDED. THE ATTACHMENT METHOD MUST DISTRIBUTE THE LOAD ACROSS THE DECK AS APPROVED BY THE STRUCTURAL ENGINEER.
28. PROPERLY LUBRICATE ALL PIECES OF EQUIPMENT BEFORE TURNING THE SYSTEM OVER TO THE OWNER.
29. PREPARE 6 COPIES OF SUBMITTALS IN AN INDEXED, LABELED FOLDER CONTAINING FULL PERFORMANCE, MATERIAL AND INSTALLATION INFORMATION ABOUT ALL EQUIPMENT, PIPING, COMPONENTS AND ACCESSORIES TO BE USED. SUBMITTALS WILL BE CHECKED AT MOST TWICE. TIME SPENT ON SUBSEQUENT SUBMITTALS WILL BE BILLED TO THE CONTRACTOR BY THE ENGINEER AT ITS CURRENT HOURLY RATES.

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www.spectrum-engineers.com

CONSULTANTS

LICENSED PROFESSIONAL ENGINEER — No. 277596-2202 — JONATHAN T. JENSEN — STATE OF UTAH

HEBER M. WELLS BUILDING

STATE PROPERTY NO: 06187310

COOLING REPLACEMENT

SALT LAKE CITY, UTAH

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ISSUE: CONSTRUCTION DOCUMENTS	
DATE:	4/12/2007
DFCM PROJECT NO:	06187310
PROJECT NO:	20060295
DRAWN BY:	ARA
CHECKED BY:	JTJ
DESIGNED BY:	JTJ
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SHEET TITLE

MECHANICAL SYMBOLS, SCHEDULES, DETAILS & GENERAL NOTES

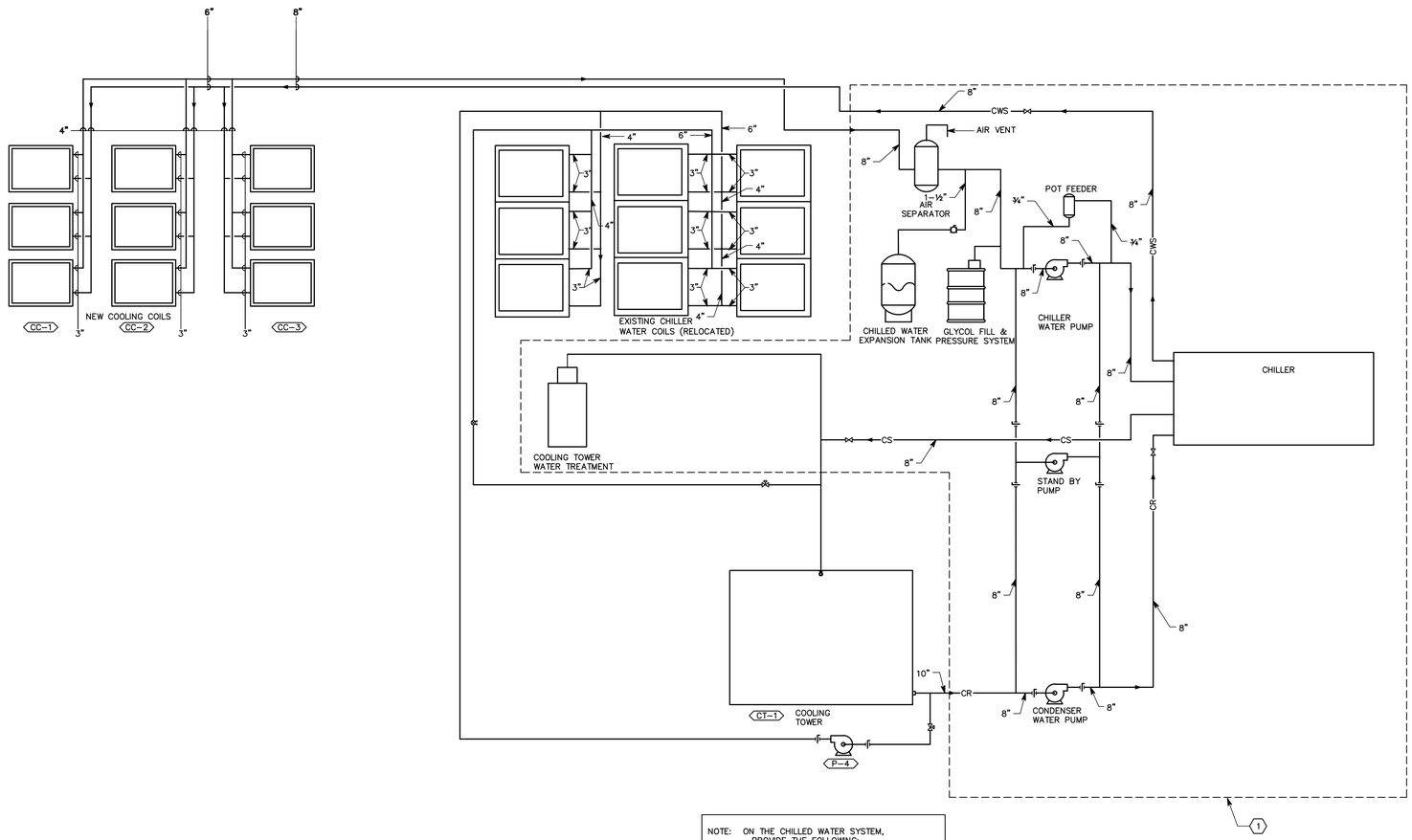
ME-001

SHEET 1 OF 8

File name: P:\2006\20060295\Drawings\Sheet\95ME-001.dwg Last Plotted: 04/11/2007 @ 13:54 By: ara

SHEET KEYNOTES

1. PART OF EXISTING SYSTEM



NOTE: ON THE CHILLED WATER SYSTEM, PROVIDE THE FOLLOWING:
1. MANULA AIR VENTS ONLY (NO AUTOMATIC AIR VENTS)
2. CAP ALL DRAINS AND BLOWDOWN VALVES.

1 CHILLED WATER SYSTEM PIPING DIAGRAM SCHEMATIC

SCALE: NOT TO SCALE

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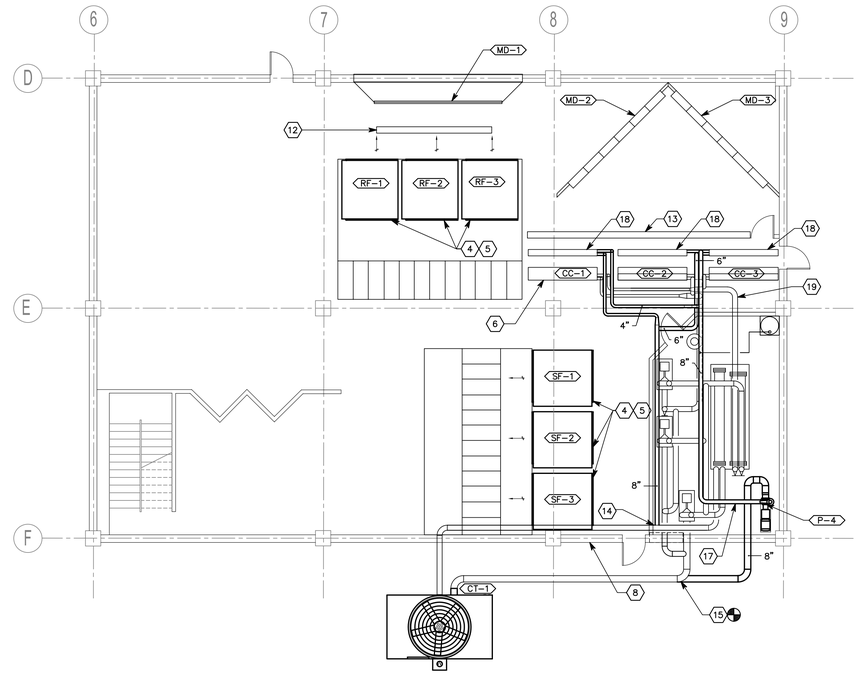
SHEET TITLE

MECHANICAL SCHEMATIC

ME-501

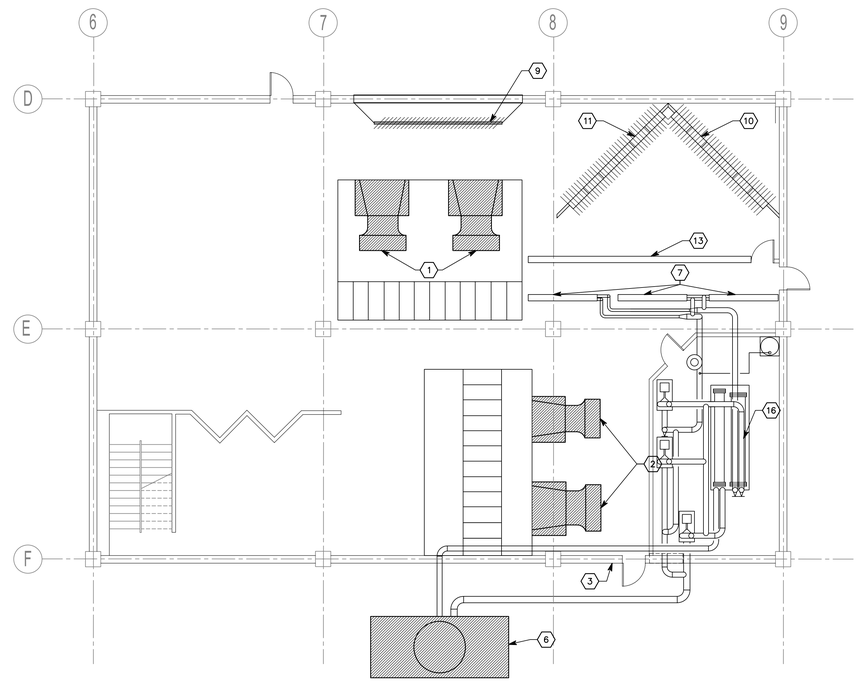
SHEET 2 OF 8

File name: P:\2006\20060295\1Drawings\Sheet 95ME-501.dwg Last Plotted: 04/11/2007 @ 13:55 By: ara



2 PENTHOUSE MECHANICAL HVAC PLAN

SCALE: 1/8"=1'-0"



1 PENTHOUSE MECHANICAL HVAC DEMOLITION PLAN

SCALE: 1/8"=1'-0"

SHEET KEYNOTES

1. REMOVE EXISTING 20HP RETURN FANS.
2. REMOVE EXISTING 100 HP SUPPLY FANS.
3. CUT HOLE IN WALL LARGE ENOUGH TO BRING IN NEW FAN EQUIPMENT. RELOCATE DOOR IF NECESSARY.
4. CONTRACTOR TO VERIFY SPACE AND MOUNTING REQUIREMENTS FOR NEW FANS. CONTRACTOR TO PROVIDE ANY NECESSARY MODIFICATIONS TO SUPPORT STRUCTURE FOR FAN INSTALLATION
5. COORDINATE CENTERLINE OF FANS AND SOUND TRAPS. MOUNT FANS ON SPRING ISOLATORS.
6. REMOVE EXISTING COOLING TOWER. CAP EXISTING CONNECTING PIPING FOR FUTURE CONNECTION WITH FUTURE COOLING TOWER.
7. REMOVE EXISTING COOLING COILS AND RELOCATE.
8. PATCH AND REPAIR HOLE TO MATCH EXISTING.
9. REMOVE EXISTING RELIEF AIR DAMPERS.
10. REMOVE EXISTING OUTSIDE AIR DAMPERS.
11. REMOVE EXISTING RETURN AIR DAMPERS.
12. PROVIDE 16" X 8" LOUVRE FOR DAMPER PRESSURE RELIEF. MOUNT TO FLOOR SUFFICIENT TO WITHSTAND MAXIMUM FAN PRESSURE. USE AIROLITE MODEL 609A OR EQUIVALENT.
13. RELOCATE WALL, DOOR, AND EXISTING FILTER BANK TO ALLOW 18" MINIMUM CLEARANCE BETWEEN FILTERS AND COILS.
14. CONNECT TO EXISTING CONDENSER WATER SUPPLY.
15. CONNECT TO EXISTING CONDENSER WATER RETURN.
16. EXISTING CHILLER PIPING.
17. NEW PIPE SHOWN IN BOLD TYP.
18. EXISTING COOLING COILS RELOCATED.
19. EXISTING PIPING TO OLD COILS MAY BE REUSED TO CONNECT TO NEW COILS.

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SHEET TITLE
PENTHOUSE MECHANICAL AND DEMOLITION PLANS

MH-101
SHEET 3 OF 8

EQUIPMENT SCHEDULE

MARK	QTY	ITEM DESCRIPTION	LOAD DATA							WIRE AND CONDUIT SIZE	OVERCURRENT PROTECTION			DISCONNECT			STARTER DATA												NOTES	MARK
			HP	kW	MCA	FLA	VOLT	PH	Hz		FURN BY	DEVICE	LOCATION	FURN BY	DEVICE	LOCATION	FURN BY	DEVICE	LOCATION	SIZE	SPEED	CTRL VOLT	SELECTOR SWITCH	PUSH BUTTON	PILOT LAMP	NORMALLY OPEN CONTACTS	NORMALLY CLOSED CONTACTS	PHASE FAILURE RELAY	SCHEMATIC REFERENCE	REMOTE CTRL		
CT-1A		COOLING TOWER	15			21	480	3	60	3 #8, #10 GR 1" CND	E	MCP CB	MCC	E	30A/3P NO FUSE	ADJ. TO EQUIP.	E	SOFT START	MCC	2			HOA		R,G	2	2	YES				CT-1A
CT-1B		COOLING TOWER	15			21	480	3	60	3 #8, #10 GR 1" CND	E	MCP CB	MCC	E	30A/3P NO FUSE	ADJ. TO EQUIP.	E	SOFT START	MCC	2			HOA		R,G	2	2	YES				CT-1B
CT-1H		COOLING TOWER SUMP HEATER		6		7.2	480	3	60	3 #12, #12 GR 0.75" CND	E	20A/3P CB	MCC	E	30A/3P NO FUSE	ADJ. TO EQUIP.	E	FVNR	MCC				HOA		R,G	2	2	NO				CT-1H
P-4		ECONOMIZER PUMP	25			34	480	3	60	3 #6, #10 GR 1" CND	E	60A/3P CB	MCC	Q	VFC	ADJ. TO EQUIP.	Q	VFC	ADJ. TO EQUIP.												P-4
RF-1		RETURN FAN	30			40	480	3	60	3 #4, #8 GR 1.25" CND	E	70A/3P CB	MCC	Q	VFC	ADJ. TO EQUIP.	Q	VFC	ADJ. TO EQUIP.												RF-1
RF-2		RETURN FAN	30			40	480	3	60	3 #4, #8 GR 1.25" CND	E	70A/3P CB	MCC	Q	VFC	ADJ. TO EQUIP.	Q	VFC	ADJ. TO EQUIP.												RF-2
RF-3		RETURN FAN	30			40	480	3	60	3 #4, #8 GR 1.25" CND	E	70A/3P CB	MCC	Q	VFC	ADJ. TO EQUIP.	Q	VFC	ADJ. TO EQUIP.												RF-3
SF-1		SUPPLY FAN	100			124	480	3	60	3 #4/0, #4 GR 2.5" CND	E	225A/3P CB	MCC	Q	VFC	ADJ. TO EQUIP.	Q	VFC	ADJ. TO EQUIP.												SF-1
SF-2		SUPPLY FAN	100			124	480	3	60	3 #4/0, #4 GR 2.5" CND	E	225A/3P CB	MCC	Q	VFC	ADJ. TO EQUIP.	Q	VFC	ADJ. TO EQUIP.												SF-2
SF-3		SUPPLY FAN	100			124	480	3	60	3 #4/0, #4 GR 2.5" CND	E	225A/3P CB	MCC	Q	VFC	ADJ. TO EQUIP.	Q	VFC	ADJ. TO EQUIP.												SF-3

EQUIPMENT SCHEDULE KEY

E	DIVISION 16
Q	FURNISHED WITH THE EQUIPMENT
*	COORDINATE WITH THE DIVISION 15 TEMPERATURE CONTROL INSTALLER
**	AUTOMATIC CONTROL WIRING BY DIVISION 15

DEFINITIONS

NOTE: ALL DEFINITIONS MAY NOT BE USED.

INDICATED: THE TERM "INDICATED" REFERS TO GRAPHIC REPRESENTATIONS, NOTES, OR SCHEDULES ON THE DRAWINGS, OTHER PARAGRAPHS OR SCHEDULES IN THE SPECIFICATIONS, AND SIMILAR REQUIREMENTS IN THE CONTRACT DOCUMENTS. WHERE TERMS SUCH AS "SHOWN", "NOTED", "SCHEDULED", AND "SPECIFIED" ARE USED, IT IS TO HELP THE READER LOCATE THE REFERENCE, NO LIMITATION ON LOCATION IS INTENDED.

DIRECTED: TERMS SUCH AS "DIRECTED", "REQUESTED", AUTHORIZED", "SELECTED", "APPROVED", "REQUIRED", AND "PERMITTED" MEAN "DIRECTED BY THE ENGINEER", "REQUESTED BY THE ENGINEER", AND SIMILAR PHRASES.

APPROVED: THE TERM "APPROVED", WHERE USED IN CONJUNCTION WITH THE ENGINEER'S ACTION ON THE CONTRACTOR'S SUBMITTALS, APPLICATIONS, AND REQUESTS, IS LIMITED TO THE ENGINEER'S DUTIES AND RESPONSIBILITIES AS STATED IN GENERAL AND SUPPLEMENTARY CONDITIONS.

FURNISH: THE TERM "FURNISH" IS USED TO MEAN "SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION, AND SIMILAR OPERATIONS."

INSTALL: THE TERM "INSTALL" IS USED TO DESCRIBE OPERATIONS AT PROJECT SITE INCLUDING THE ACTUAL "UNLOADING, UNPACKING, ASSEMBLY, ERECTION, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS."

PROVIDE: THE TERM "PROVIDE" MEANS "TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE."

INSTALLER: AN "INSTALLER" IS THE CONTRACTOR OR AN ENTITY ENGAGED BY THE CONTRACTOR, EITHER AS AN EMPLOYEE, SUBCONTRACTOR, OR SUB-SUBCONTRACTOR, FOR PERFORMANCE OF A PARTICULAR CONSTRUCTION ACTIVITY, INCLUDING INSTALLATION, ERECTION, APPLICATION, AND SIMILAR OPERATIONS. INSTALLERS ARE REQUIRED TO BE EXPERIENCED IN THE OPERATIONS THEY ARE ENGAGED TO PERFORM.

SYMBOL LEGEND

SYMBOL	DESCRIPTION
REFERENCE AND LINE SYMBOLS	
A5 / E-501	DETAIL INDICATOR: A5 INDICATES DETAIL NUMBER, E-501 INDICATES DRAWING SHEET WHERE DETAIL IS SHOWN.
A5 / E-201	ELEVATION OR SECTION INDICATOR, EXTERIOR: A5 INDICATES ELEVATION OR SECTION NUMBER, E-201 INDICATES DRAWING SHEET WHERE ELEVATION OR SECTION IS SHOWN.
100	ROOM OR SPACE NUMBER.
1	KEYNOTE INDICATOR.
1	REVISION INDICATOR.
CU-1	EQUIPMENT INDICATOR.
	BREAK, STRAIGHT: TO BREAK PARTS OF DRAWING.
	BREAK, ROUND.
WIRING METHODS	
	WIRING.
A-1,3,5	BRANCH CIRCUIT HOME RUN TO PANELBOARD: NUMBER OF ARROWS INDICATES NUMBER OF CIRCUITS. LETTER AND NUMBER NOTATIONS IDENTIFY PANEL AND CIRCUIT NUMBERS. USE #12 CONDUCTORS, EXCEPT #10 CONDUCTORS SHALL BE INSTALLED IF DISTANCES EXCEED THOSE SPECIFIED IN SECTION 16120.
1 A-1,3,5	BRANCH CIRCUIT HOME RUN TO PANELBOARD: NUMBER OF ARROWS INDICATES NUMBER OF CIRCUITS. LETTER AND NUMBER NOTATIONS IDENTIFY PANEL AND CIRCUIT NUMBERS. NUMBER IN BOX REFERS TO THE CONDUCTOR AND CONDUIT SCHEDULE. FOR BRANCH WIRING USE #12 CONDUCTORS, EXCEPT #10 CONDUCTORS SHALL BE INSTALLED IF DISTANCES EXCEED THOSE SPECIFIED IN SECTION 16120.
1	CONDUCTOR & CONDUIT ("CC") SCHEDULE INDICATOR. REFER TO ONE-LINE DIAGRAM.
	JUNCTION BOX.
SC	JUNCTION BOX, SYSTEMS FURNITURE COMMUNICATION CONNECTION.
	EARTH GROUND (ONE-LINE DIAGRAM).
ELECTRICAL POWER AND DISTRIBUTION	
	FUSE WITH RATING (ONE-LINE DIAGRAM).
	DISCONNECT, FUSED (ONE-LINE DIAGRAM).
	DISCONNECT, NONFUSED (ONE-LINE DIAGRAM).
	DISCONNECT WITH FUSE AND MOTOR STARTER COMBINATION (ONE-LINE DIAGRAM).
	OVERLOAD RELAY (ONE-LINE DIAGRAM).
	STARTER (ONE-LINE DIAGRAM).
	CIRCUIT BREAKER, MOLDED CASE (ONE-LINE DIAGRAM).
MCP	CIRCUIT BREAKER, MOTOR CIRCUIT PROTECTION (ONE-LINE DIAGRAM).
	CIRCUIT BREAKER, SOLID STATE (ONE-LINE DIAGRAM).
	MOTOR.
	TRANSFORMER (ONE-LINE DIAGRAM).
	TRANSFORMER, CURRENT (ONE-LINE DIAGRAM).
	BATTERY (ONE-LINE DIAGRAM).
	DISCONNECT SWITCH, FUSED.
	DISCONNECT SWITCH, UNFUSED.
	STARTER, COMBINATION WITH DISCONNECT SWITCH.
	STARTER OR MOTOR CONTROLLER.
	PUSHBUTTON.
	PUSHBUTTONS, MOTOR CONTROL.
	PANELBOARD CABINET, SURFACE MOUNTED, 1 SECTION.
	PANELBOARD CABINET, SURFACE MOUNTED, 2 SECTION.
DP#__	DISTRIBUTION PANEL OR SWITCHBOARD.

ABBREVIATIONS

NOTE: ALL ABBREVIATIONS MAY NOT BE USED.

1P	SINGLE POLE	LTG	LIGHTING
1PH	SINGLE-PHASE	LV	LOW VOLTAGE
3PH	THREE-PHASE	MAX	MAXIMUM
4W	FOUR-WIRE	MCA	MINIMUM CIRCUIT AMPS
ADA	AMERICANS WITH DISABILITIES ACT	MCC	MOTOR CONTROL CENTER
ADJ	ADJACENT	MCP	MOTOR CIRCUIT PROTECTION
AFF	ABOVE FINISHED FLOOR	MDP	MAIN DISTRIBUTION PANEL
AIC	AMPERE INTERRUPTING CAPACITY	MH	MANHOLE
AMP	AMPERE	MIN	MINIMUM
ASC	AMPS SHORT CIRCUIT	MLO	MAIN LUGS ONLY
AWG	AMERICAN WIRE GAGE	MOCP	MAXIMUM OVERCURRENT PROTECTION
CB	CIRCUIT BREAKER	NA	NOT APPLICABLE
CKT	CIRCUIT	NC	NORMALLY CLOSED
CND	CONDUIT	NIC	NOT IN CONTRACT
CO	CONVENIENCE OUTLET	NL	NIGHT LIGHT
CT	CURRENT TRANSFORMER	NO	NORMALLY OPEN
CU	COPPER	NTS	NOT TO SCALE
EA	EACH	OC	ON CENTER
EM	EMERGENCY	OCP	OVER CURRENT PROTECTION
EQUIP	EQUIPMENT	OL	OVERLOAD
EX	EXISTING	PF	POWER FACTOR
FA	FIRE ALARM	PH	PHASE
FCP	FIRE ALARM CONTROL PANEL	PNL	PANEL
FLA	FULL LOAD AMPS	QTY	QUANTITY
FVNR	FULL VOLTAGE NON-REVERSING	R	REMOVE
FVR	FULL VOLTAGE REVERSING	RCP	REFLECTED CEILING PLAN
G	GROUND	SCA	SHORT CIRCUIT AMPS
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	SF	SQUARE FOOT (FEET)
GFP	GROUND FAULT PROTECTION	SPEC	SPECIFICATION
HID	HIGH INTENSITY DISCHARGE	S/S	START/STOP
HOA	HAND-OFF-AUTOMATIC	SWBD	SWITCHBOARD
HP	HORSE POWER	TP	TWISTED PAIR
HPF	HIGH POWER FACTOR	TTB	TELEPHONE TERMINAL BOARD
HV	HIGH VOLTAGE	TV	TELEVISION
HZ	HERTZ	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSER
IG	ISOLATED GROUND	TYP	TYPICAL
IN/IS	INSULATED/ISOLATED	UF	UNDERFLOOR
IR	INFRARED	UGND	UNDERGROUND
KV	KILOVOLT	UPS	UNINTERRUPTIBLE POWER SUPPLY
KVA	KILOVOLT AMPERE	V	VOLTS
kVAR	KILOVOLT AMPERE REACTIVE	VA	VOLT AMPERE
kW	KILOWATT	VFC	VARIABLE FREQUENCY CONTROLLER
kWh	KILOWATT HOUR	W/	WITH
LED	LIGHT EMITTING DIODE	W/O	WITHOUT
LRA	LOCKED ROTOR AMPS	WP	WEATHERPROOF
		XFMR	TRANSFORMER

GENERAL ELECTRICAL NOTES

1. CLARIFICATION METHODS: AT THE TIME OF BIDDING, BIDDERS SHALL FAMILIARIZE THEMSELVES WITH THE DRAWINGS AND SPECIFICATIONS. ANY QUESTIONS, MISUNDERSTANDINGS, CONFLICTS, DELETIONS, DISCONTINUED PRODUCTS, CATALOG NUMBER DISCREPANCIES, DISCREPANCIES BETWEEN THE EQUIPMENT SUPPLIED AND THE INTENT OR FUNCTION OF THE EQUIPMENT, ETC. SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER IN WRITING FOR CLARIFICATION PRIOR TO ISSUANCE OF THE FINAL ADDENDUM AND BIDDING OF THE PROJECT. WHERE DISCREPANCIES OR MULTIPLE INTERPRETATIONS OCCUR, THE MOST STRINGENT (WHICH IS GENERALLY RECOGNIZED AS THE MOST COSTLY) THAT MEETS THE INTENT OF THE DOCUMENTS SHALL BE ENFORCED.

2. OWNER FURNISHED ITEMS: THE OWNER WILL FURNISH MATERIAL AND EQUIPMENT AS INDICATED IN THE CONTRACT DOCUMENTS TO BE INCORPORATED INTO THE WORK. THESE ITEMS ARE ASSIGNED TO THE INSTALLER AND COSTS FOR RECEIVING, HANDLING, STORAGE, IF REQUIRED, AND INSTALLATION ARE INCLUDED IN THE CONTRACT SUM.

   A. THE INSTALLER'S RESPONSIBILITIES ARE THE SAME AS IF THE INSTALLER FURNISHED THE MATERIALS OR EQUIPMENT.

   B. THE OWNER WILL ARRANGE AND PAY FOR DELIVERY OF OWNER FURNISHED ITEMS FREIGHT ON BOARD JOB SITE AND THE INSTALLER WILL INSPECT DELIVERIES FOR DAMAGE. IF OWNER FURNISHED ITEMS ARE DAMAGED, DEFECTIVE OR MISSING, DOCUMENT DAMAGED ITEMS WITH THE TRANSPORT COMPANY AND THE OWNER WILL ARRANGE FOR REPLACEMENT. THE OWNER WILL ALSO ARRANGE FOR MANUFACTURER'S FIELD SERVICES, AND THE DELIVERY OF MANUFACTURER'S WARRANTIES AND BONDS TO THE INSTALLER.

   C. THE INSTALLER IS RESPONSIBLE FOR DESIGNATING THE DELIVERY DATES OF OWNER FURNISHED ITEMS AND FOR RECEIVING, UNLOADING AND HANDLING OWNER FURNISHED ITEMS AT THE SITE. THE INSTALLER IS RESPONSIBLE FOR PROTECTING OWNER FURNISHED ITEMS FROM DAMAGE, INCLUDING DAMAGE FROM EXPOSURE TO THE ELEMENTS, AND TO REPAIR OR REPLACE ITEMS DAMAGED AS A RESULT OF HIS OPERATIONS.

3. EXPOSED STRUCTURE AREAS (EXCLUDING MECHANICAL, ELECTRICAL, AND COMMUNICATION SPACES): INSTALL RACEWAYS BETWEEN DECK AND STRUCTURE WHEREVER POSSIBLE IN EXPOSED STRUCTURE CEILING AREAS. ROUTE RACEWAYS IN CONCEALED AREAS WHEREVER POSSIBLE. REFER ALL CONDITIONS WHERE RACEWAYS MUST BE INSTALLED WHICH CANNOT COMPLY WITH THESE REQUIREMENTS TO THE ARCHITECT.

4. SUBMITTALS: PROVIDE SUBMITTALS IN THREE RING BINDERS WITH JOB NAME, SUBCONTRACTOR, AND VOLUME ON THE BINDING. PREPARE TABS FOR EACH SPECIFICATION SECTION REQUIRING SUBMITTALS. PREPARE INDEX OF EQUIPMENT SUBMITTED IN EACH TAB.

5. REFLECTED CEILING PLANS: COORDINATE THE LOCATION OF LIGHT FIXTURES WITH THE ARCHITECTURAL REFLECTED CEILING PLANS. REFER ALL DISCREPANCIES TO THE ARCHITECT AND ENGINEER.

ELECTRICAL SHEET INDEX

SHEET NO	SHEET TITLE
EE001	SYMBOL LEGEND AND INDEX SHEET & EQUIP SCHEDULE
EP101	FIRST FLOOR PANEL PLAN
EP102	PENTHOUSE POWER AND DEMO PLANS
EP601	EXISTING POWER ONE-LINE DIAGRAM
EP602	POWER ONE-LINE DIAGRAM

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SYMBOL LEGEND, SHEET INDES & EQUIPMENT SCHEDULE

EE-001

SHEET 4 OF 8

File name: P:\2006\20060295\1Drawings\Sheet\95EE-001.dwg Last Plotted: 04/11/2007 @ 13:51 By: ara

GENERAL SHEET NOTES

1. ELECTRICAL PANELS ON THIS SHEET ARE EXISTING AND ARE SHOWN FOR REFERENCE ONLY.
2. CONDUIT ROUTING IS DIAGRAMMATIC ONLY. FIELD VERIFY EXISTING CONDITIONS AND EXACT ROUTING.
3. PRIOR TO CORE DRILLING SUSPENDED SLABS, X-RAY OR OTHERWISE VERIFY THAT NO CONDUITS, POST-TENSIONED CABLES OR STRUCTURAL MEMBERS WILL BE DAMAGED.

SHEET KEYNOTES

1. ROUTE CONDUIT ABOVE LAY-IN CEILING.
2. RISE CONDUIT UP THROUGH ELECTRICAL ROOMS TO PENTHOUSE. FIELD VERIFY LOCATION FOR CONDUIT RISER.

2000A BUSWAY

MAIN ELECTRICAL ROOM

"MDS"

A1 FIRST FLOOR POWER PLAN
SCALE: 1/8" = 1'-0"

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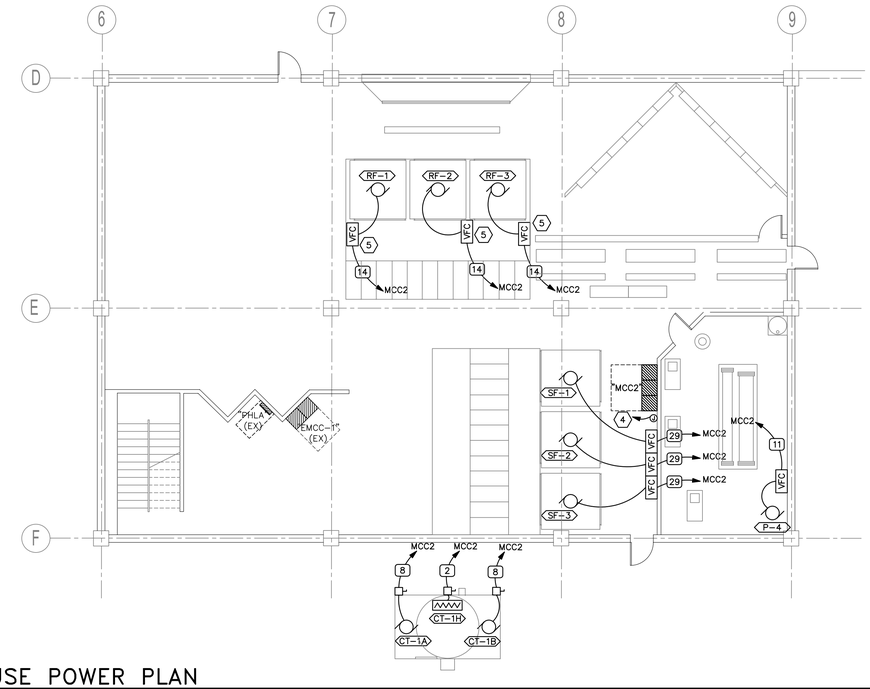
SHEET TITLE
FIRST FLOOR PANEL PLAN

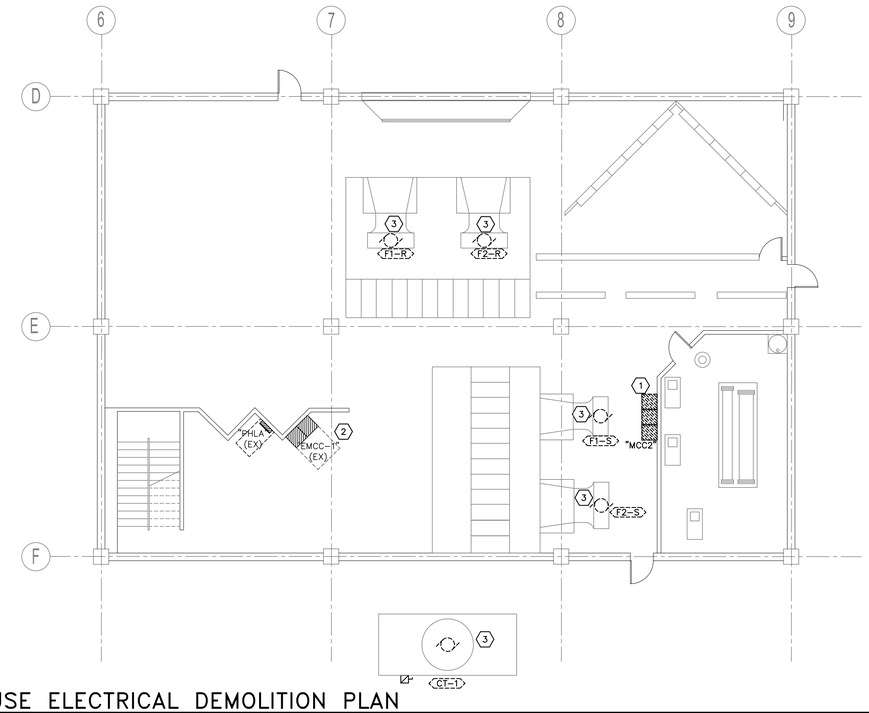
EP-101
SHEET 5 OF 8

File name: P:\2006\20060295\1Drawings\Sheet 95EP-101.dwg Last Plotted: 04/11/2007 @ 13:52 By: ara



2 PENTHOUSE POWER PLAN

SCALE: 1/8" = 1'-0"



1 PENTHOUSE ELECTRICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

SHEET KEYNOTES

1. REMOVE AND DISPOSE OF EXISTING "MCC2" INCLUDING FEEDER CONDUIT AND WIRING TO IT'S SOURCE. INSTALL NEW MOTOR CONTROL CENTER AND RE-CONNECT EXISTING LOADS AND CONTROL WIRING. COORDINATE MCC REPLACEMENT WITH BUILDING MANAGER TO MINIMIZE INTERUPTION OF SUPPLY AIR FAN OPERATION.
2. REMOVE AND DISPOSE OF CONDUIT AND WIRING FEEDING EXISTING FAN MOTORS FED FROM EXISTING "EMCC1" (F1-R AND F1-S). FEED NEW SUPPLY AND RETURN FAN MOTORS FROM NEW "MCC2".
3. REMOVE EXISTING CONDUIT AND WIRING FROM EXISTING FAN MOTORS. NEW FAN MOTORS TO BE FED FROM NEW MCC2 AS INDICATED ON ONE-LINE DIAGRAMS.
4. PROVIDE 20A 120V CIRCUIT FOR TEMPERATURE CONTROL PANEL. CIRCUIT TO EXISTING PANEL "PHLA" AND PROVIDE 20/1 CIRCUIT BREAKER TO MATCH EXISTING. COORDINATE EXACT LOCATION WITH CONTROLS CONTRACTOR.
5. PROVIDE UNISTRUT MOUNTING RACK FOR VFC ADJACENT TO RETURN FAN.

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LICENSED PROFESSIONAL ENGINEER
No. 181563
DAVID E. WESEMANN
STATE OF UTAH

HEBER M. WELLS BUILDING

STATE PROPERTY NO:
06187310

COOLING REPLACEMENT

SALT LAKE CITY, UTAH

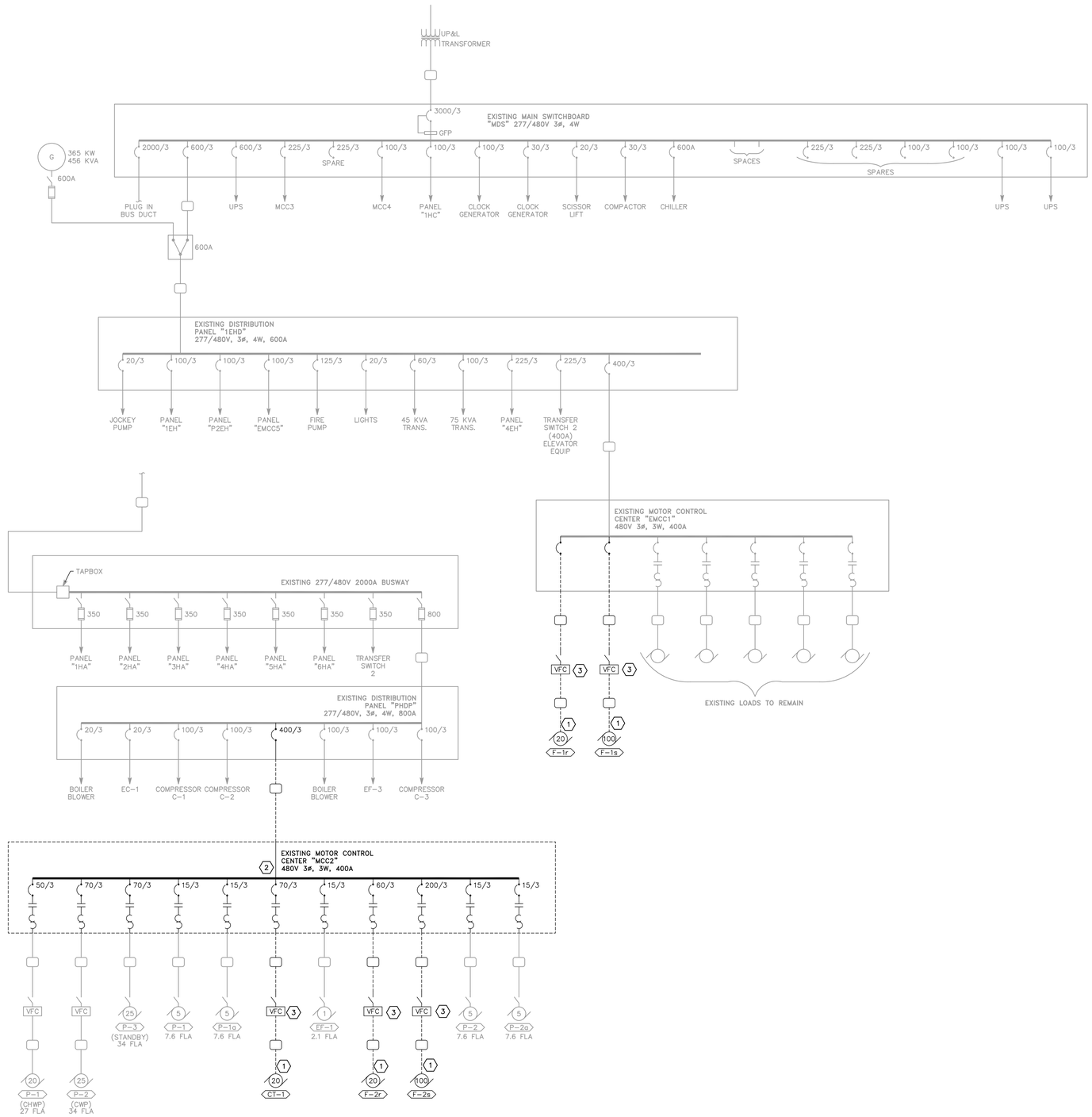
MARK	DATE	DESCRIPTION
5		
4		
3		
2		
1		

ISSUE: CONSTRUCTION DOCUMENTS	
DATE:	4/12/2007
DFCM PROJECT NO:	06187310
PROJECT NO:	20060295
DRAWN BY:	WJS
CHECKED BY:	RBK
DESIGNED BY:	RBK
RECORD DRAWING DATE:	
SIGNATURE:	

SHEET TITLE
PENTHOUSE POWER AND DEMOLITION PLANS

EP-102
SHEET 6 OF 8

File name: P:\2006\20060295\1Drawings\Sheet 95EP-102.dwg Last Plotted: 04/11/2007 @ 13:52 By: ara



1 EXISTING POWER ONE-LINE DIAGRAM
SCALE: N.T.S.

CONDUCTOR AND CONDUIT SCHEDULE

SCHEDULE NUMBER
SUBSCRIPT (NOTE 5)
(E.G.) 5 IG

SYM	AMP	CONDUIT SIZE	CONDUCTOR(NOTE 1) QTY	SIZE	GR	IG	SE	NOTES
1	20	.75	2	12	12	12	8	2
2	20	.75	3	12	12	12	8	2,3
3	20	.75	4	12	12	12	8	2,3
4	30	.75	2	10	10	10	8	2
5	30	.75	3	10	10	10	8	2
6	30	.75	4	10	10	10	8	2
7	40	1	2	8	10	8	6	2
8	40	1	3	8	10	8	6	2
9	40	1	4	8	10	8	6	2
10	55	1	2	6	10	8	4	2
11	55	1	3	6	10	8	4	2
12	55	1.25	4	6	10	8	4	2
13	70	1	2	4	8	4	2	2
14	70	1.25	3	4	8	4	2	2
15	70	1.25	4	4	8	4	2	2
16	85	1.25	2	3	8	3	2	2
17	85	1.25	3	3	8	3	2	2
18	85	1.25	4	3	8	3	2	2
19	95	1.25	3	2	8	2	2	2
20	95	1.50	4	2	8	2	2	2
21	130	1.50	3	1	6	2	2	2
22	130	1.50	4	1	6	2	2	2
23	150	2	3	1/0	6	2	1/0	2
24	150	2	4	1/0	6	2	1/0	2
25	175	2	3	2/0	6	2	2/0	2
26	175	2	4	2/0	6	2	2/0	2
27	200	2	3	3/0	6	2	2/0	2
28	200	2.50	4	3/0	6	2	2/0	2
29	230	2.50	3	4/0	4	2	2/0	2
30	230	2.50	4	4/0	4	2	2/0	2
31	255	2.50	3	250	4	1	2/0	2
32	255	2.50	4	250	4	1	2/0	2
33	310	3	3	350	3	1/0	3/0	2
34	310	3	4	350	3	1/0	3/0	2
35	380	3.50	3	500	3	3/0	3/0	2
36	380	4	4	500	3	3/0	3/0	2
37	400	2 EA 2	3	3/0	3	3/0	3/0	2
38	400	2 EA 2.50	4	3/0	3	3/0	3/0	2
39	510	2 EA 2.50	3	250	1	4/0	3/0	2
40	510	2 EA 3	4	250	1	4/0	3/0	2
41	620	2 EA 3	3	350	1/0	4/0	3/0	2,4
42	620	2 EA 3	4	350	1/0	4/0	3/0	2,4
43	760	2 EA 3.50	3	500	1/0	4/0	3/0	2,4
44	760	2 EA 4	4	500	1/0	4/0	3/0	2,4
45	855	3 EA 3	3	300	2/0	4/0	3/0	2,4
46	855	3 EA 3	4	300	2/0	4/0	3/0	2,4
47	1000	3 EA 3.50	3	400	2/0	4/0	3/0	4
48	1000	3 EA 3.50	4	400	2/0	4/0	3/0	4
49	1140	3 EA 4	3	500	3/0	4/0	3/0	4
50	1140	3 EA 4	4	500	3/0	4/0	3/0	4
51	1240	4 EA 3	3	350	3/0	4/0	3/0	4
52	1240	4 EA 3	4	350	3/0	4/0	3/0	4
53	1675	5 EA 3.50	4	400	4/0	4/0	4/0	4
54	2010	6 EA 3.50	4	400	250	250	250	4
55	2660	7 EA 4	4	500	350	350	350	4
56	3040	8 EA 4	4	500	500	500	500	4
57	4180	11 EA 4	4	500	500	500	500	4
58		5 EA 4						6
59		5						6
60		10 EA 4						6

CONDUCTOR AND CONDUIT SCHEDULE NOTES

1. CONDUCTORS SHOWN ARE SHOWN FOR EACH CONDUIT WITH MODIFICATIONS AS NOTED IN NOTE 5. ALL CONDUCTORS SHOWN ARE THWN UNLESS OTHERWISE NOTED.
2. PROVIDE EQUIPMENT GROUND CONDUCTORS PER TABLE 250-122 WHEN CIRCUIT BREAKERS ARE SIZED GREATER THAN AMPERE RATING SHOWN IN TABLE.
3. PROVIDE #10 NEUTRALS FOR MULTIWIRE BRANCH CIRCUITS SERVING COMPUTERS.
4. GROUND (G) CONDUCTOR MAY BE DELETED ON SERVICE ENTRANCE CONDUCTORS.
5. WHEN SYMBOL SUBSCRIPT INDICATES "IG", INCLUDE "IG" OR INSULATED GROUND CONDUCTOR SCHEDULED ALONG WITH GROUND OR EQUIPMENT GROUND CONDUCTOR. WHEN SYMBOL SUBSCRIPT INDICATES "SE", SUBSTITUTE "SE" CONDUCTOR FOR "G" CONDUCTOR SHOWN WHICH IS SIZED FOR THE GROUNDING OF THE SECONDARY OF THE SEPARATELY DERIVED SYSTEMS.
6. RACEWAY ONLY. CONDUCTORS PROVIDED BY UTILITY.

GENERAL SHEET NOTES

1. PROVIDE NEMA 3R ENCLOSURES FOR EQUIPMENT LOCATED OUTDOORS. REFER TO PLANS FOR EQUIPMENT LOCATIONS.
2. REFER TO PLANS FOR CONSTRAINTS ON PHYSICAL DIMENSIONS AND CLEARANCE REQUIREMENTS OF EQUIPMENT. PROVIDE EQUIPMENT DIMENSIONS THAT FALL WITHIN THE CONSTRAINTS OF EACH SPECIFIC LOCATION.
3. ALL EQUIPMENT SHALL BE CONSTRUCTED AND BRACED FOR THE SEISMIC CONDITIONS OF THE PROJECT. REFER TO SPECIFICATIONS SECTION 16071 FOR REQUIREMENTS.

SHEET KEYNOTES

1. DISCONNECT EXISTING FAN MOTORS TO BE REMOVED. REMOVE ALL ASSOCIATED CONDUIT WIRING, AND EQUIPMENT BACK TO MCC.
2. REMOVE EXISTING MCC2 WITH ASSOCIATED FEEDER. PROVIDE NEW MCC2 AS INDICATED ON NEW ONE-LINE DIAGRAM. EXISTING LOADS NOT IDENTIFIED TO BE REMOVED SHALL BE RECONNECTED TO NEW MCC.
3. SALVAGE REMOVED VARIABLE FREQUENCY CONTROL CONTROLLERS TO OWNER'S MAINTENANCE PERSONNEL.

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SHEET TITLE
EXISTING POWER ONE-LINE DIAGRAM

EP-601
SHEET 7 OF 8

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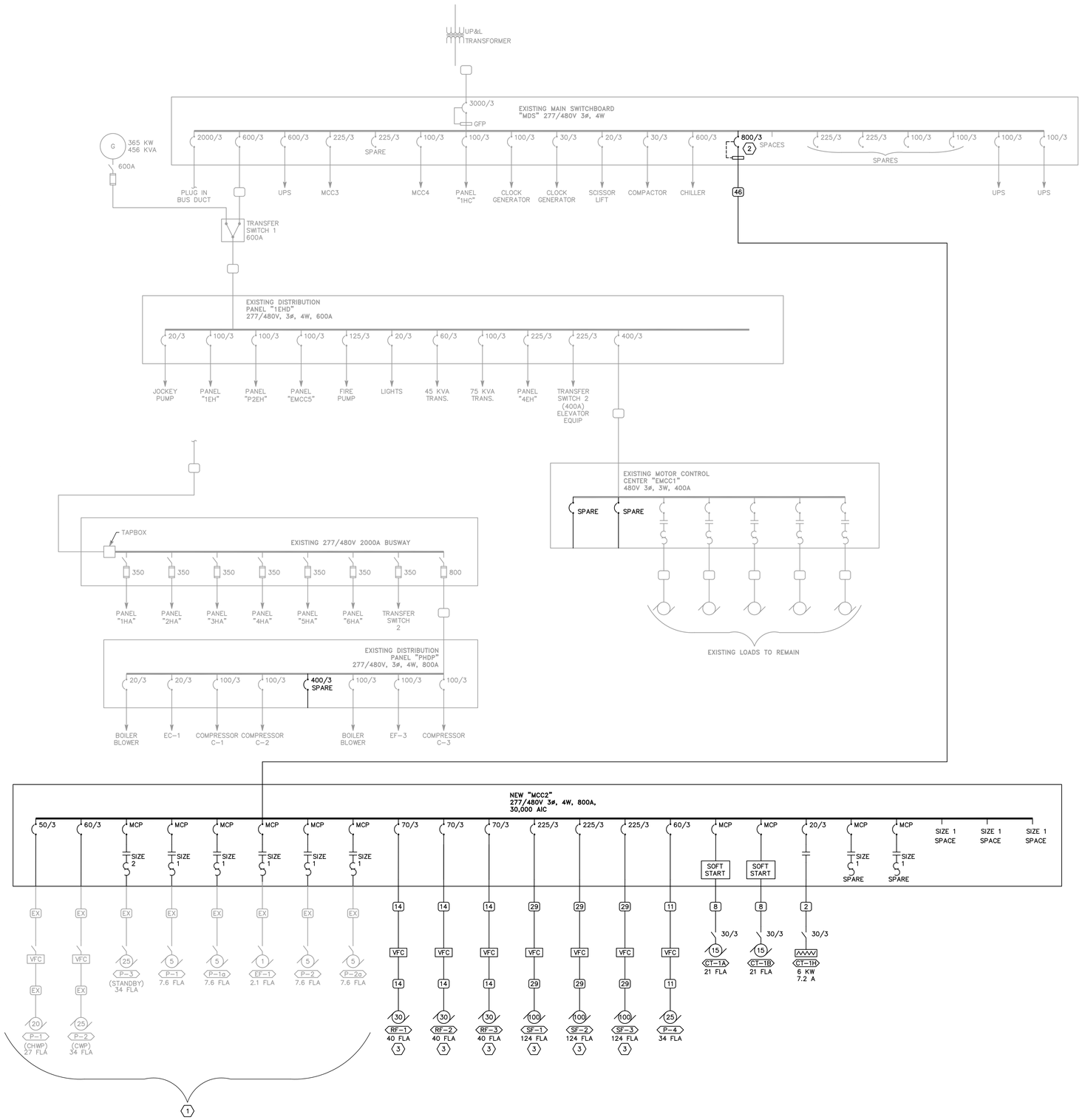

1 POWER ONE-LINE DIAGRAM

SCALE: N.T.S.

CONDUCTOR AND CONDUIT SCHEDULE

** SCHEDULE NUMBER
** SUBSCRIPT (NOTE 5)
(E.G.) 5 IG

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3	20	.75	4	12	12	12	8	2,3
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5	30	.75	3	10	10	10	8	2
6	30	.75	4	10	10	10	8	2
7	40	1	2	8	10	8	6	2
8	40	1	3	8	10	8	6	2
9	40	1	4	8	10	8	6	2
10	55	1	2	6	10	8	4	2
11	55	1	3	6	10	8	4	2
12	55	1.25	4	6	10	8	4	2
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36	380	4	4	500	3	3/0	3/0	2
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60		10 EA 4						6

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3. PROVIDE #10 NEUTRALS FOR MULTIWIRE BRANCH CIRCUITS SERVING COMPUTERS.
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6. RACEWAY ONLY. CONDUCTORS PROVIDED BY UTILITY.

GENERAL SHEET NOTES

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2. REFER TO PLANS FOR CONSTRAINTS ON PHYSICAL DIMENSIONS AND CLEARANCE REQUIREMENTS OF EQUIPMENT. PROVIDE EQUIPMENT DIMENSIONS THAT FALL WITHIN THE CONSTRAINTS OF EACH SPECIFIC LOCATION.
3. ALL EQUIPMENT SHALL BE CONSTRUCTED AND BRACED FOR THE SEISMIC CONDITIONS OF THE PROJECT. REFER TO SPECIFICATIONS SECTION 16071 FOR REQUIREMENTS.
4. FIELD VERIFY SIZE OF ALL EXISTING MOTORS PRIOR ORDERING MOTOR CONTROL CENTER.
5. ALL VFC'S ARE FURNISHED BY DIVISION 15 AND INSTALLED AND WIRED BY DIVISION 16.

SHEET KEYNOTES

1. EXISTING LOADS TO BE RECONNECTED. EXTEND CIRCUITS AS REQUIRED. RECONNECT ALL CONTOL WIRING AND TEST FOR COMPLETE OPERATION.
2. PROVIDE NEW CIRCUIT BREAKER IN EXISTING SWITCHBOARD, COMPATIBLE WITH ORIGINAL SWITCHBOARD AND RATED AT 65,000 AIC.
3. RECONNECT EXISTING FIRE ALARM FAN SHUTDOWN TO NEW FAN SPEED CONTROLLERS.

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SHEET TITLE
POWER ONE-LINE DIAGRAM

EP-602

SHEET 8 OF 8